BRIEFING PAPER #1

The Legal Foundation

As a rule, municipal stormwater utilities are established by ordinance. The vast majority of these ordinances are enacted by local government — Board of Aldermen, Selectboard, City Council, and so on. Public referendum is also an option. This paper will focus on the elements that go into drafting stormwater utility ordinances.

INTRODUCTION: ANATOMY OF AN ORDINANCE

While there is considerable variety in the way stormwater utilities are managed and how they charge their customers, their origins are very much the same: municipal regulations establish the utility and its power to collect fees, state who shall oversee its operations, lay out the fee structure and rate, provide a process for appeals, and specify where fees shall be deposited. These issues, along with various "boilerplate" sections concerning municipal liability, date of effectiveness and so on, are covered in every stormwater utility ordinance.

Most ordinances also include "findings of fact" to justify the establishment of the utility, definitions to clarify terms, details on the utility's physical boundaries and jurisdiction, billing collection procedures and regulations, and references to other stormwater management regulations at either the state or local level. The increased detail and precision can help municipal officials, staff and citizens understand the purpose of the utility and how it works, and can play a role in getting the ordinance passed.

Increased detail and clarity can also help an ordinance withstand legal challenge. This has not been an issue for most stormwater utilities. Of the 97 stormwater utilities responding to a national survey conducted by Black & Veatch Management Consulting in 1995-1996, 84% had not experienced such a challenge. But 15 did.[1] Tools for deterring, and protecting a stormwater utility ordinance against, potential challenge include citing the existing legal authority under which the utility is established, providing evidence of the need for the utility and the public process leading up to it, and ensuring the consistency of the stormwater utility ordinance with other local, state and federal regulations.

[1] Of the 15 stormwater utilities who reproted a legal challenge in the Black & Veatch survey, 9 had their fees sustained and the rest either reached a settlement or had not yet resolved the situation at the time of inquiry.

In addition to the basic elements describing the utility and how it functions, and the complementary elements providing for clarity, some stormwater utility ordinances include items that are specific to the locality. For example, Tacoma, Washington's ordinance includes special provisions for waterfront properties, and Cincinnati's features a mandate to the City Council that, prior to commencement of stormwater utility operations, it will enact a comprehensive drainage code. These three categories of ordinance provisions — what appears in nearly every stormwater utility ordinance, what appears in most, and features that are unique to just a few — will be explored in greater detail below. The information is the based on a close analysis of 10 ordinances, covering utilities in different parts of the country.

I. THE BASIC COMPONENTS OF A STORMWATER UTILITY ORDINANCE

As a general rule, municipal stormwater utility ordinances contain sections covering:

The Name

Though not a specific section of the ordinance, how the utility and the utility fee is referred to is an important component of it — and one that appears again and again. The name of the utility, the ordinance or fee can reflect community concerns and, by extension, function as a piece of public relations. While many stormwater management utilities, charges or fees are called, simply, stormwater management utilities, charges or fees others have been called "drainage utilities or funds," "stormwater pollution abatement charges," "storm and surface water utilities," "storm drainage service charges." These names attempt to relate the utility function and value to the user.

The Article or Chapter Designation in the Municipal Code

This information pertains to the organization and numbering system of the local ordinance, and where the stormwater utility regulations shall be located. Typical language might read: *An ordinance relating to stormwater runoff, establishing a municipal utility for stormwater management, amending (the appropriate sections of the municipal code).*

Establishment of the Utility and its Power to Collect Fees

This is the crux of the ordinance. Language varies, but generally includes the statement *There is hereby established a stormwater management utility*...What follows typically refers to the purpose of the utility, its responsibilities, administration, power to collect a fee, etc. This information may be given succinctly in a single paragraph, as this example from Cincinnati:

> *There shall be a division of stormwater management utility, within the department of public works, which shall be responsible for developing and implementing stormwater management plans and solely managing facilities, stormwater systems and storm sewers. This division shall charge a storm drainage service charge based on individual contribution of runoff to the system, benefits enjoyed and service received. The division of stormwater management utility shall be administered by the city stormwater management engineer under the direction and supervision of the director of public works.*

Alternatively, each sentence in the paragraph above might be elaborated upon and given its separate, numbered section in the ordinance.

The System Of Fees

Descriptions of the stormwater charges are generally the most detailed and varied portions of the ordinance, as they will be used as the basis for billing. There is typically a description of each of the elements used in making the billing calculations, such as Intensity of Development Factor, Runoff Factor, Development Classification, Customer Classification, Equivalent Runoff Unit (ERU), etc., as appropriate. Also when applicable, credits for on-site and surface water detention systems, age or income level are described. Some ordinances specify a dollar amount or rate, as in *The monthly charge per ERU is $1.00.* Others do

not, instead presenting a formula to which a rate can later be applied — e.g. all residential customers are to be charged the rate for one (1) ERU. For example, the Hillsboro County, Florida stormwater utility ordinance states:

> *The Board of County Commissioners, upon recommendation of the Director, shall, from time to time, by resolution, establish a rate for each ERU consistent with the benefits to be provided...*

The section on fees may also acknowledge that the system is subject to change. It may provide for periodic review of either the assessment formula or the rate (e.g. annually, every 2 years, etc.). Charleston, South Carolina included language in their stormwater utility ordinance stating that:

> *Pending the adoption of a permanent fee schedule, City Council may adopt an interim schedule or fees to assist in funding the establishment of the Utility, pending the completion and adoption of the Stormwater Utility Rate Study.*

Sometimes the issue of rate review is addressed in its own section of the ordinance. In addition to the question of periodicity — that is, when or how often the rate shall be reviewed — ordinances can specify who will determine the rate and the procedure for change.

Establishment or Designation of a Special Fund or Account in which the Fees will be Deposited
One of the most prominent reasons for creating a stormwater utility is to have funding for stormwater management in a separate and distinct municipal account. The money is earmarked solely for stormwater management activities, ensuring both a steady funding source and accountability to utility customers. Typically, the stormwater utility ordinance will contain a numbered section stating this fact — i.e. *A separate fund shall be created, known as the ...., for the purpose of identifying and controlling all revenues and expenses attributable to the utility.* This section may also detail activities for which the funds may, or may not, be used, including investment and borrowing. It may also provide for the production of an annual accounting to be provided to the municipal government.

Identification of Who is — and is not — Charged
Where fees will be imposed on each and every lot and parcel of land within the municipality, this is explicitly stated, usually in connection with a description of the charges. Where this is not the case, as in exemptions for wetlands, undeveloped property, government property, etc., the heading *Exclusion Of Certain Properties* is typically used.

The Process For Adjustment And Appeals
This section lays out the procedure to be followed by customers who believe their charge has been calculated based upon incorrect information about their property or customer classification, or is otherwise unjust.

Protection Of The Municipality From Liability
Because many of the stormwater utilities currently in existence were established to address situations relating to flooding from stormwater runoff, ordinances typically include a section with the heading *Flooding, Liability* disclaiming responsibility and liability for damage relating to flooding that occurs subsequent to the creation of the stormwater utility.

> *This chapter does not imply that property subject to the fees and charges established herein will always be free from stormwater flooding...*

Severability
Severability refers to the assertion that...

Should any part of this ordinance be deemed invalid by a court of competent jurisdiction, the remaining portions hereof shall not be affected and shall remain in full force and effect.

Along the same line, some ordinances address the issue of potential conflicts with other sections of the municipal code with a statement that *All ordinances or parts of ordinances insofar as they are inconsistent or in conflict with the provisions of this ordinance are superseded to the extent of any conflict.*

Effective Date
In addition to stating the date the ordinance takes effect, this section may also specify a separate date when billing can begin.

FOR CONSIDERATION:
Much of the information to be set down in a stormwater utility ordinance reflects decisions made about the utility management and assessment method, addressed in other papers in this series. Considerations specific to drafting the ordinance include:

- Where in the municipal code does the stormwater utility ordinance belong? Are there existing regulations that are affected and/or amended?
- How shall the utility, fee and ordinance be called?
- How shall the stormwater utility rate be set? Should there be provisions for periodic review?
- Is there the potential for the establishment of the utility to give ride to unreasonable expectations for which a disclaimer should be made — e.g. control of property flooding, stream and river bank erosion, combined sewer overflows?

II. SUPPLEMENTARY COMPONENTS OF A STORMWATER UTILITY ORDINANCE

As discussed above, many stormwater utility ordinances also contain language or sections covering the following:

Findings of Fact
Sometimes coming under such section heading names as *Findings of Fact, Findings and Determinations* or *Declaration of Purpose* , and often appearing at the opening of an ordinance without heading or section number, this component provides information about the development of the utility. Typically, it takes the form of a series of sentences or paragraphs beginning with *Whereas*...Statements may include references to:

- the environmental situation giving rise to the need for the utility — *e.g. the lands and water of this municipality are great natural resources; the management of stormwater runoff is necessary to reduce pollution, siltation, sedimentation, local flooding and stream channel erosion, all of which have an adverse impact on land and water resources, and public health, safety and welfare; the repair, replacement, improvement, management and regulation of the existing stormwater management system is necessary to prevent ....., etc.*
- the governmental conditions giving rise to the need for, and/or allowing the establishment of the utility — e.g. state enabling legislation; state legislation authorizing municipalities to operate a public utility; legislative mandates for stormwater management or other related water pollution control; relevant state or local stormwater management plans, policies or studies, etc.
- community conditions leading to the establishment of the stormwater utility — *e.g. the municipality maintains a system of stormwater management facilities, including, but not limited to, inlets, conduits, manholes, channels,...etc.; it is necessary and in the best interests of the municipality, its citizens and the users of the stormwater system to establish a special charge for the maintenance and improvement of the municipality's stormwater management facilities, systems*

and services; the municipality needs to upgrade its capability to maintain existing and future stormwater management facilities and measures; owners of improved real property should finance the stormwater management system to the extent the contribute to the need for the system, etc.

Conditions relevant to the situation in Chicopee and South Hadley which may be appropriate to cite in a stormwater utility ordinance include, but are by no means limited to:

- the relationship between stormwater runoff, combined sewer overflows (CSOs) and pollution in the Connecticut and Chicopee Rivers;
- the negative impact of CSO-caused pollution on full utilization of the communities' water resources for fishing, swimming, boating, diving and other recreational and economic development uses;
- EPA mandates to conduct CSO abatement according to a legally binding schedule (the Administrative Orders);
- the exorbitant cost of CSO abatement by traditional methods of sewer separation;
- the inability of the community to finance mandated and otherwise needed pollution reduction activities;
- the potential for significant reductions in CSO abatement through a stormwater management-based approach;
- concern about, and the desire to prevent, the need for costly treatment of stormwater drain releases into the rivers;
- the ability of Massachusetts communities to collect user fees under home rule;
- municipal meetings, hearings, studies, votes, etc. leading up to the establishment of the utility.

Definitions

Some stormwater utility ordinances contain no definitions. Others primarily define new terminology specifically related to the utility such as *runoff factor, intensity of development factor, land use categories, equivalent runoff unit, basic assessment unit, parcel billing unit, base rate, benefited property, on-site detention, impervious surface area, semi-pervious surface area, stormwater facilities, stormwater runoff, non-stormwater runoff,* and so on. Yet others define commonplace terms within the context of the utility. These include: *annual budget, year, revenue, fee, owner, parcel, parcel size, square footage of surface area of lot or parcel of real property, utility customer, subdivider or developer, single family residential parcel, multi-family residential parcel, dwelling unit, developed property, director, cost of service.*

Factors affecting terms to be defined in a stormwate utility ordinance include the specific details of the billing system, definitions already included in the municipal code, and the general style of the existing code to which the ordinance will be added.

Authority

Many ordinances include a statement of the authority under which the utility is established, and cite relevant state regulations authorizing localities to establish stormwater utilities, public utilities, collect user fees, etc. , as appropriate. This section is usually in lieu of similar language in a *Findings...* section (see above).

Massachusetts does not have state enabling legislation that specifically authorizes municipalities to establish stormwater utilities but communities are permitted to collect user fees under home rule regulations. Utilities established under home rule may be more vulnerable to legal challenge than if enabling legislation were present. However, there is precedent around the country for proceeding without the authority conferred by enabling legislation. In Florida, for example, several stormwater utilities were created prior to the passage of state legislation. The state now has over 25 stormwater utilities. For a complete discussion of legal issues pertaining to creation of a stormwater utility in Massachusetts, see "How To Kit" Legal Foundation—"An Inventory and Review of Existing Massachusetts Laws and Regulations Pertaining to the Creation of a Stormwater Utility."

Physical Boundaries and Jurisdiction
This section is comprised of a statement of the geographic area to be served by the stormwater utility — e.g. the corporate limits of the city, specific designated drainage service areas. Often, this language is not placed in its own separate section of the ordinance, but is part of the declaration establishing the utility, as in this example from Austin, Texas:

> *The City Council hereby establishes the drainage utility service area as the city limits of the City of Austin, as presently configured and as the same may be amended from time to time.*

Sometimes a map of the service area is attached, or a map of stormwater flows in the municipality, along with appropriate language assigning responsibility to the utility for the management of stormwater runoff within the designated area.

Billing Regulations, Collection and Penalties
Often billing regulations for the stormwater utility are covered under, or combined with the billing regulations for sanitary sewerage. Where this is the case, the location of these regulations is referenced. When the stormwater utility has specific regulations of its own, these are presented in full.

FOR CONSIDERATION:

- What is the style and level of detail in the existing municipal code? Is this level of detail considered adequate, or does the community have a history of litigation resulting from ambiguities in its ordinances?
- What are the important findings or fact or determinations to be cited?
- What terms, aside from new terms related to the calculation of fees, should be defined?
- Will he billing regulations, collection method and penalties for the stormwater utility be different from those of the existing water and sewer utility?

III. SPECIAL FEATURES OF STORMWATER UTILITY ORDINANCES

As noted above, stormwater ordinances sometimes include regulations or references specific to the circumstances surrounding the individual stormwater utility. Examples include:

- The City of Tacoma, Washington has special provisions for waterfront properties, since they make up a significant portion of the utility's customer base and do not typically make use of, or affect, the municipal stormwater system. Another special feature of the ordinance is its inclusion in a small, spiral-bound booklet, titled *Sewage Disposal and Drainage Regulations and Rates*, produced for distribution to the general public.
- Cincinnati's ordinance, which asserts that prior to commencement of operations, the City Council will enact a comprehensive drainage code and other necessary rules and regulations also details the relationship between the stormwater utility and other municipal departments, specifying that *The Division of Stormwater Management Utility may avail itself of the services and facilities of other city departments necessary for the discharge of its responsibility — public works, personnel, finance, legal counsel, etc. Services shall be paid for by the Division at cost plus established overhead.*
- The stormwater utility ordinance for Fort Collins includes several provisions pertaining to stormwater management and pollution abatement, such as a requirement that stormwater facilities are required in new subdivisions, a statement making it is unlawful to discharge pollutants or contaminated water in public streets, watercourse, stormwater facility, any public or private property where there is the potential for migration, and an assessment for off-site stormwater

improvements for new construction. Typically, such regulations are enacted separate from the establishment of a stormwater utility, as in the case with Cincinnati, above.

- Bellevue, Washington's ordinance states that there is no estimated cost for the facilities, rights and original system or plan of the storm and surface water public utility. In contrast, Fort Collin's code provides basin by basin details of its drainage improvement plans, noting that *The stormwater basin fee base rate is founded upon the estimated or actual cost of necessary improvements and facilities identified in various basin master plans...*

FOR CONSIDERATION:

- Would the establishment or functioning of the stormwater utility be facilitated by new municipal stormwater management regulations?
- Does the community have specific stormwater management improvement plans, cost estimates, etc. that would strengthen the ordinance?

CONCLUSION: ORDINANCES FOR COMMUNITIES

How an ordinance is structured and worded is part legal requirement and part community style. A stormwater utility ordinance is not an independent, stand alone document, but something to be appended to a community's existing code. It will be used by members of the community, and read and debated by them prior to its adoption. The ordinance should:

- fit and be consistent with the community's existing code;
- be easy to read and understand by community residents as well as municipal officials and lawyers;
- reflect the decisions and concerns of the municipality in the process leading up to the establishment of the utility;
- justify the need and authority for the utility;
- be as explicit and detailed as possible, while also being as succinct as possible.

BRIEFING PAPER #2

Community Outreach & Public Involvement

An overwhelming majority of stormwater utility managers around the country say they believe an organized public information and education effort to be "essential" to the success of a stormwater utility.[1] This paper will present an array of communications methods and messages used by established stormwater utilities, and will also address the question of "How much community outreach and public information is enough?"

INTRODUCTION: A STORMWATER WHAT?

When people pay for something, they want to know what they're getting for their money. But while the benefits of a stormwater utility are indeed tangible and measurable — e.g. cleaner water, safe recreational use of rivers, reduced street and basement flooding, etc. — they are not direct. Education is needed to help utility customers make the connection between the fees they pay, the programs and projects undertaken by the municipality, and the environmental and personal benefits that come from stormwater management.

Making these connections early on in the development process is important for generating the public support needed to pass a utility ordinance. Even after a utility is up and running, education and outreach activities remain valuable and nearly every established utility conducts them. They can foster acceptance of the fee structure and rates and minimize unwarranted appeals for adjustments or exemptions. They can promote stormwater management practices to property owners, and they can help a utility deliver on one of the advantages it offers the public: municipal accountability. The specially earmarked funds of a

[1] 1995 Black & Veatch Stormwater Utility Survey; Florida Association of Stormwater Utilities

stormwater utility assure ratepayers of steady, reliable financing for necessary stormwater management activities; education programs can be used to inform ratepayers about how their fees are used.
In the northeast, where stormwater utilities are rare, education can also play an important role in familiarizing ratepayers with the concepts behind the new fee. Few people in a community beyond the public works department will have heard the terms stormwater or stormwater utility management, let alone understand what it is or why stormwater fees might be needed.

Considerations in developing public support for stormwater utilities include:

- Message — what information should be communicated and how should it be framed?
- Media — what kinds of education and outreach activities will reach the intended audiences most effectively?
- Budgeting — how much emphasis — and resources — should be placed on education? and
- Staffing — how will the outreach activities be conducted?

I. MESSAGE

What to focus on in a public education effort, and how to frame the message, depends in large part on whether the stormwater utility has been established or is in the development stage. Other factors include the specific circumstances in the community leading to the need for a stormwater utility, the receptivity of the community to the new fee, and the audience being addressed.

Timing

Education activities conducted prior to establishing a stormwater utility often — though not always, as in the case of Austin, Texas, described below — focus on justifying and explaining the new fee to the community. For example, Bellevue, Washington, highlighted the expensive capital improvements in their drainage system required by federal regulators as a means of convincing residents of the need for its new fee. Boca Raton, Florida, prepared their customers by sending out sample bills six months before its stormwater utility ordinance went into effect. The bill was accompanied by information explaining the advantages to this method of financing stormwater management needs.

In contrast with Bellevue and Boca, Austin, Texas chose not to focus on the impending new fee in its pre-utility public education efforts. Instead, the city launched a massive campaign promoting clean water resources and keeping garbage and pollutants out of the stormdrains. The reasoning behind Austin's strategy was that the controversial subject of the new fee should be avoided, and public discussion should focus on issues where there was concensus, such as the need for clean water.

After stormwater utilities have been established, education efforts typically change to promoting environmentally responsible practices relevant to stormwater. Just what those practices are depends on stormwater problems of the specific community.

Circumstances

In Florida and South Carolina, where flooding is the driving issue behind stormwater management programs, educational materials concentrate on the need for, and benefits to be derived from, flood control. In Los Angeles, where toxic chemicals and garbage entering stormdrains and polluting the ocean and bays is of primary concern, the focus is on getting citizens to make the connection between personal actions such as spilling motor oil down a catchbasin and the health of local water resources. The campaign uses "Make the Connection" as its slogan, with the tag line "Storm drains lead straight to the ocean."

These examples show how the content of stormwater utility education programs varies with local issues. In the study demonstration communities of Chicopee and South Hadley, the stormwater utility approach is being considered because of government mandates to remove stormwater from combined sewers. Relevant topics for public information include the CSO problem, the costs of complying with federal clean water regulations, and ways property owners can control their stormwater on-site.

Audiences

Successful education campaigns tailor their messages to the audience being addressed. How much do they

know about stormwater issues? need to know? want to know? What are the personal benefits to be gained from better stormwater management in their community? Many stormwater utilities emphasize reduced flooding in their educational efforts because that is a benefit to which property owners can relate and will readily support.

Educational campaigns can be addressed to the community at large, or specific sectors of it. Because the Los Angeles program targets oil spills and other toxics entering storm drains, its materials include posters promoting "Good Gas Station Operating Practices" and "Good Operating Practices for the Auto Repair Industry." A comparable target group relevant to the study communities is owners and developers of large commercial and industrial sites where stormwater best management practices may be implemented.

Style

Style in stormwater utility educational materials ranges from the corporate to the cute. Cincinnati's *Stormwater Management Utility* brochure is sober and corporate in both appearance and tone, explaining why the utility is needed, what it does, how customers are billed and what customer services are provided. Los Angeles takes the approach of an advertising campaign, with its slogan and tag line used repeatedly on a coordinated set of media that includes posters, video, brochures and stickers. Materials in Austin, Texas feature Storm Derrane, private crud investigator and Emm Maculate, clean water heroine, in the drama of polluted Town Lake. Citizens are urged to "Get Your Mind in the Sewer" and "Cut the Crud."

II. PROGRAMMING

Brochures and pamphlets are the most common methods used by stormwater utilities to communicate their messages to customers. But many go beyond that using such creative media as video, posters, t-shirts, and even doorknob hangers that let residents know a storm drain cleaning crew visited their neighborhood. Typically, programs include a combination of different types of activities in order to respond to different situations and reach different audiences.

Direct Communication

Direct communication refers to materials and messages sent directly from the utility to the utility customer, without an intermediary such as television or newspapers. Examples include brochures or newsletters inserted into water and sewer bills, specially prepared direct mail letters, and the doorknob hangers cited above — anything thing that is distributed directly from the utility to the intended recipient. Direct communication techniques give users the advantage of control — over both the message being communicated and who receives it.

Examples: Mount Pleasant, South Carolina sent a direct mail letter to property owners describing the city's new stormwater program and why funding was needed for its implementation. The letter closes with an appreciation of the community's support and a number to call with questions.

Boca Raton, Florida used bill insert distribution to send customers a sample of the new water bill showing the itemized stormwater fee. The sample bill was accompanied by an informational brochure describing the new fee, how it is calculated and what it is to be used for.

The News Media

Newspapers, television and radio can be used as communications tools by stormwater utilities on either a paid or free basis.

Paid coverage is, essentially, advertising. Aside from required tombstone-style newspaper ads for public hearings, advertising is not usually done, possibly because of its associations with commercial products and political contests.

Unpaid news coverage offers the advantage of reaching a large audience at relatively little cost. When the coverage is positive, the utility gains credibility. But there are no guarantees that coverage will be positive. Unlike the situation with direct communications, unpaid news coverage offers the utility little message control. A municipality can not be certain that reporting will happen when needed or wanted, or that the information delivered will be clear and accurate. Basic public relations techniques can help:

- Written materials such as news releases and fact sheets provide reporters with facts for reference, along with the municipality's perspective.
- News releases written in the style of the target reporter can help convince editors and news managers that the story fits in with their paper or program.
- Increasing the frequency of news releases and media contacts can increase the frequency of coverage.
- Providing photographs or other visual materials such as charts and maps may increase the amount of space or prominence given to an article; providing an interesting scenario for video can increase the chances of television coverage.
- Involving well-known figures, such as state or federal level politicians, may increase chances for coverage.
- Designating one or two spokespeople for the utility can ensure messages are delivered with consistency, and facilitate relationships with reporters. Spokespeople may also appear on local talk programs to discuss the utility and stormwater issues.
- Prompt reaction to negative or incorrect coverage can minimize damage.

While news coverage is unpaid, it is not free. Effective public relations activities requires substantial staff time for writing news releases and making media contacts.

Public Service announcements (PSAs) are somewhat of a hybrid between advertising and public relations. Television and radio spots produced like commercials, they have a public service content and are aired by stations for free. Timing is the issue. Stations broadcast PSAs when they can't sell high-priced commercial time, generally very early in the morning, very late at night or on weekends. So while the air time is free and the message is controlled, audience levels may be low. PSAs for television need to be professionally produced on video while radio stations may be supplied with either a professionally produced audiotape or script to be read by announcers or disc jockeys.

Examples: The stormwater utility in Charleston, South Carolina was able to get favorable newspaper coverage by providing a map showing the distribution of stormwater utilities around the country. The article implied that Charleston is on the cutting edge, joining a progressive, pro-active movement.

The education efforts of Los Angeles' stormwater utility are part of a larger "L.A. Resource" program on the city's pollution control efforts. The program included a PSA in two versions — one 15 second and one 30 second spot — urging viewers to "Make the Connection" between what goes into their storm drains and what comes out into the ocean. Titled "The Fantastic Voyage," it features computer animation of pollutants flowing through the storm drains to the sea.

Special Events and Programs

Special events and programs include such activities as public hearings, meetings and presentations, and information booths at local fairs and festivals. They offer an opportunity for interactive engagement with the public — that is, a chance for municipal officials to speak with the public, answer their questions on the spot and hear what they have to say. In contrast with the types of activitivies discussed above using mass media and mass mailings, the number of people reached is relatively low.

Public hearings are required by law as part of the ordinance development process. Their success as platforms for public education depends on the preparation going into them: how well the events are publicized, promoted and attended; the level of information provided, and the style in which it is delivered. This also holds true for public meetings held above and beyond the legal requirements. Hearings and meetings can be enlivened and made more effective with the use of presentation media such as story boards, overheads, slides and video.

Local events such as fairs or community celebrations provide ready made opportunities for distributing information. The settings are lively and fun, quite different from the formal atmosphere of a City Hall hearing, and likely to attract a different audience. Information booths can be places to trot out the presentation boards or video used at public meetings and, of course, flyers and pamphlets. They also lend themselves to lighter kinds of handouts such as slogan imprinted buttons, refrigerator magnets, funnels for recycling used oil, stickers, posters, etc.

Example: Austin, Texas prepared a slide show on the stormwater utility which was used in public meetings and later shown on public access television station.

School Environmental Education Curricula

School environmental education programs are commonly used after the implementation of stormwater utilities as part of campaigns to keep garbage and pollutants out of the stormdrains. Themed materials such as coloring books and stickers are used to bring the message home to parents.

Examples: Fort Collins, Colorado incorporated stormwater related issues into an existing environmental education curriculum. Children learn about such issues as hazardous waste disposal dangers and the connection between clean water resources and stormdrains.

The L.A. Resource program includes several child-based approaches: "Safe House. Safe Me!" is a coloring book for very young children wih a centerfold picture of a storm drain discharging to the watery home of a frog and fish. The making of the "Fantasic Voyage" PSA (noted above) was turned into the subject of a ten minute classroom video. "The Magical City Forest" is a teacher's guide covering a variety of urban environmental issues including stormwater. It was repared by a non-profit environmental group under a contract with the stormwater utility.

III. BUDGETING

How much emphasis should be placed on getting community support? A 1995 national stormwater utility survey by Black and Veatch shows 62% of those responding believe an organized public information and education effort is essential. Further, 38% found it helpful and only 1% found it unnecessary. Yet the same survey reported that 99% set aside between zero and five percent of their budget for education and public outreach activities.

At first, it appears the two sets of statistics are contradictory. Why so little for a highly valued activity? A number of explanations are possible. Public education activities are considerably less costly than stormwater management programs, particularly if capital expenses are involved. For example, 5 percent of a million dollar program is $50,000, sufficient to fund a full-time staff person to devote to the outreach process.

In addition, educational activities pertaining to the stormwater utility may be undertaken by other municipal departments and not show up in the utility's budget. This is certainly the case prior to utility establishment, when the most time consuming aspects of public education — meetings and hearings — need to be held. Stormwater utilities surveyed by the Pioneer Valley Planning Commission as part of this study indicated that education activities prior to implementation were completed by existing municipal staff who took on additional responsibilities.

Out of the ten utilities surveyed by PVPC, only two did not conduct some form of public outreach campaign. All of the utilities were required by law to inform the public that there would be an additional fee on their utility bill. This requirement was met by sending out a public meeting announcement. Eight of the utilities voluntarily went beyond this requirement and initiated an outreach campaign. The campaign was carried out through public hearings, bill inserts, newspaper articles, and traveling slide shows. Each of the utilities surveyed managed to implement the stormwater utility fee, regardless of their education campaign. The reason for this is that each town had a good idea of how much community support there was prior to the launch of the education campaign.

Reading your community

It is important to have a sense of what your community's reaction will be to an increase in their utility fees. Through the use of a focus group, which is a sample of the community, it is possible to gauge the response of the community by listening to the concerns presented by the focus group. Some municipalities have found that there is support within the community for a fee that will protect their water quality or protect their streets from flooding. Other municipalities are aware that implementing an additional fee will be a considerable challenge in their community requiring extensive education. The amount of money and energy directed towards education prior to the implementation of the fee will be based on this initial reading of the community's willingness to give support.

Hillsboro, Florida- The simple approach

The DPW managers of Hillsboro County, Florida did not engage in an extensive public outreach campaign. Believing that there would be little resistance from the community, they sent their customers a letter inviting them to a public meeting that would be a forum to discuss the new stormwater utility fee. This public meeting met the most basic legal requirements for public outreach according to the state of Florida. The utility fee was adopted after the public hearing. The philosophy expressed by the DPW representative in Hillsboro was, "the simpler the better." Hillsboro decided at the outset that the community did not need to receive extensive education to support the new fee, so a low cost and low technology approach was taken.

Austin, a city opposed to new fees

Austin, Texas did not conduct any form of public outreach outside the legal requirements either, but for a very different reason than Hillsboro, Florida. The DPW representatives in Austin believed that the public would not support the new fee if the outreach was focused on the fee increase itself. The philosophy used by the managers of the DPW in Austin instead emphasized the need to change people's behavior, not call attention to the fee change.

The managers of the Austin DPW, at the time the fee was initiated, believed that in order to gain community support for these clean water activities, attention should not focus on an additional fee which could stir up negative feelings among the residents. Ultimately, it was believed the fee had to be paid, so why create a controversy. Austin has engaged in an enormous education campaign focused on clean water resources and keeping garbage and pollutants out of the stormdrains. The residents of Austin now pay a fee that is listed on their utility bill each month and actively participate in clean water activities.

Boca Raton—The more, the better

The utility in Boca Raton, Florida placed educational inserts in the utility bills six months prior to the actual billing of a stormwater utility fee, predicting some difficulty in convincing the public that Boca Raton needed the fee. Boca Raton used a sample stormwater utility bill as its insert, accompanied by educational information. This time period of six months prior to the actual billing gave the stormwater utility managers a chance to answer questions from the public before the fee went into effect.

Conclusion

Each of the ten utilities interviewed has successfully implemented a stormwater utility fee. However, the methods for meeting the goal were all different. It was found through the interviews that while many examples exist for education programs, the extent of the education will depend on the perceived support for the fee prior to implementation. Once a municipality establishes to what extent it will educate, it must decide who will be responsible for this outreach campaign.

IV. STAFFING

Who conducts the outreach activities?

As the previous statistics showed, the majority of utilities (62%) surveyed nationally believe that an education campaign is essential to the success of the new stormwater utility. This is contrasted however by the following statistics:

- 94% of the municipalities employ 0-1 employees for education and public outreach,
- 99% of the municipalities set aside 0-5% of the program budget for education and public outreach activities.

At first, it appears that the two sets of statistics are contradictory. On the one hand, the municipalities feel education is essential. So why don't they invest people and money in a program? These numbers are explained very simply; the bulk of the outreach that is completed prior to the actual billing of the

stormwater utility fee is completed by the staff that already exist within the municipality. Bill inserts, letters, public meetings, and slide shows are low budget projects that require a minimal amount of staff time and money to put together. The municipalities interviewed all expressed that their education activities prior to implementation were completed in-house by existing staff who took on additional responsibilities.

Why use existing staff instead of new staff?

The implementation of a new stormwater utility fee is a short-term activity that requires a temporary dedication of time by an employee. There is little need to hire a person for this position. However, if there is no time among the staff for the completion of such an activity, it is possible to hire a consultant or an intern to complete the work.

Who continues the education program after the fee is implemented?

If the stormwater utility managers choose to continue the education program after the fee is implemented, the need to hire a person for a long-term position becomes greater, but it still is not necessary. The majority of the ten utilities interviewed have added stormwater awareness and education to already existing environmental education programs, eliminating the need for an additional person.

Both Austin, Texas and Los Angeles, California added stormwater to existing education programs that included clean surface water campaigns and household toxic substance disposal programs. In contrast, Tacoma, Washington hired 1.5 customer service representatives to handle stormwater utility customer questions and printed stormwater material distribution.

Before the decision to add a person is made, the municipality must determine what departments could take on additional education or public relations tasks or who they have in place to implement additional activities.

FOR CONSIDERATION:

1. What level of community support must be gained in your community?
2. Are there existing staff members who can carry out the initial start-up program for public education?

BRIEFING PAPER #3

Management

This paper will present information concerning stormwater utility management which was gathered from phone interviews with managers of ten stormwater utilities located throughout the country. Both positive and negative aspects of each utility's organizational structure are presented for further discussion.

INTRODUCTION: MANAGING A STORMWATER UTILITY

Stormwater utilities across the country are organized, staffed and managed in many different ways. While some utilities are designated as their own organization, many others share budgets, offices and equipment with the department of public works (DPW) or another utility. There is also a great deal of variety in staffing needs and budget revenues and expenses. Through interviews with managers of ten stormwater utilities throughout the country, information was collected on the practices of these utilities in the following areas:

- How are stormwater utilities organized?
- What are the staffing needs and organizational divisions for a stormwater utility?
- What activities does a stormwater utility fund?

1. ORGANIZATION OF STORMWATER UTILITIES

The 1998-1999 survey by Black and Veatch of stormwater utilities nationwide reports that 52% of the utilities are combined with the department of public works, 8% are part of the wastewater utility, and 37% are organized as a separate utility. An additional phone survey conducted by PVPC found that the organization of the stormwater utility within the municipality is tied directly to levels of funding, utility service prioritization, and existing utility department structure.

Separate vs. Consolidated Utilities

In some cases, the stormwater utility is incorporated into the existing DPW or another utility depart-

ment because both equipment and workers are already available for operations and maintenance. Tacoma, Washington has placed its stormwater utility in the DPW and shares the cost of operation and maintenance (O&M) with the sanitary and refuse departments. Fort Collins, Colorado has recently placed all water related utilities into one consolidated utility for cost cutting purposes, terminating the 18 year old stormwater utility.

Some stormwater utilities split the organization between 2 or more existing departments within the DPW. The stormdrain system in Los Angeles, California is owned and operated by the DPW. Within the DPW, the Bureau of Engineering is in charge of design and construction of capital Improvement projects (CIP) while the Bureau of Sanitation is in charge of O&M of the existing infrastructure.

The Cincinnati, Ohio stormwater utility was part of the DPW's Metro Sewer District at its outset. However, "finger pointing" between stormwater and sewer became such a problem that in 1996 stormwater was placed in its own utility. Austin, Texas, facing the same organizational battles over equipment and cost sharing between stormwater and sewer, created a watershed management department for stormwater related projects which employs over 180 people. This office handles stormwater related areas such as flooding and erosion, flood plain management, permit acquisition, and water quality.

In order to gain a financial advantage and a higher priority, stormwater can be placed in its own department, giving it separate attention and its own appropriated flow of revenues. Kevin McBride, a stormwater utility manager in Fort Collins, Colorado, states that for eighteen years, stormwater was set up as its own utility and received a high priority for funding. This was changed in 1997 and stormwater was consolidated with other water utilities. The Fort Collins stormwater utility now receives a low priority for funds within a larger utility department.

POSITIVE AND NEGATIVE ASPECTS OF CREATING A SEPARATE STORMWATER UTILITY

Positive

- Funding is channeled directly to the stormwater utility and priority is heightened for stormwater projects.
- Conflict between the different DPW departments is avoided.
- The utility can apply for and receive outside funding targeted to stormwater projects only that joint stormwater / sewer utilities may not be eligible for.

Negative

- It is expensive to create a utility that is exclusive from the others that are already in place.
- Duplicating the purchase of equipment may seem unnecessary in the public's eyes.

FOR CONSIDERATION:

1. What is the current capacity of the DPW or other utility departments? Is there room for additional staff responsibility and equipment use?
2. What priority level does stormwater have in comparison to other utilities. If it is low, will this impact the attention it receives in funding and management?

2. WHAT ARE YOUR STAFF NEEDS AND ORGANIZATIONAL DIVISIONS?

There are three basic staff requirements: operations and maintenance (O&M), capital improvement project (CIP) engineers, and administration. Whether the utility is operated within DPW or operated as its own organization, these basic employment needs should be considered.

Operations and Maintenance (O&M)

According to the 1998-1999 survey by Black and Veatch, 85% of the stormwater utilities rely on their own staff for O&M services. O&M includes tasks such as daily maintenance of the stormwater infrastructure. Many utilities designate a specific staff for O&M because it ensures that the infrastructure will receive the attention it needs. Utilities that share O&M employees with other utility services may have difficulty with staff allocation, however, this problem can be remedied by an administrative supervisor who has insight into the needs of the stormwater infrastructure.

The number of O&M employees varies greatly among stormwater utilities. Charleston, South Carolina has a population of 100,000 and a customer base of 27,000 and an O&M staff of 40 people that it shares with the other public services in DPW. Bellevue, Washington, also with a population of 100,000, has 14 O&M employees who are specifically assigned to stormwater.

Capital Improvement Project (CIP) Staff

Capital Improvement Projects are the focus of the stormwater utility, dictating future work loads and employment needs. Depending on the project or projects selected for construction, a variety of people may be needed on staff such as engineers, permit advisors, planners, inspectors, CAD technicians, and water quality experts. The necessity for these people depends on the scale of the project and the number of projects that occur at one time.

Each of the stormwater utility managers interviewed indicated that there is at least one supervisor who oversees CIP's on the city's payroll. This person can be employed specifically by the utility or the person can be an existing employee from a different city office who takes on an additional responsibility. In many cases, this person or group of people is located in the engineering department. Five out of the ten utilities interviewed have CIP project managers and engineers located within engineering departments.

Administration

The administration staff for the stormwater utility is responsible for the coordination of all activities related to the utility. The coordination includes budget, O&M staff, plans, design, permits, and many other activities that are dependent on the organization of the utility itself. All of the utilities in the PVPC survey indicated that they have an administrative staff or a manager who oversees the entire utility. The director of public services manages the Charleston, South Carolina utility however, in Bellevue, Washington, there is a staff of five who comprise the administration division. Once again, this is related to the size of the utility and the current work load of administrators in the DPW.

Miscellaneous Staff

Most of the utilities surveyed indicated that they employ additional staff that meet the changing needs of the utility. For example, the utility in Tacoma, Washington hired two customer service representatives to field questions from the public. Boca Raton, Florida decided to increase the GIS capabilities of the stormwater utility and hire a CAD technician. These positions, while not crucial to the daily operations of the utility, were found to be useful for a specific projects.

STAFFING NEEDS SUMMARY

Required

- Operations & Maintenance (O&M)
- Administration
- Capital Improvement Project (CIP) Engineers

Optional

- Master Planners
- Water Quality Specialists
- Customer Service Representative
- CAD and GIS Technician

FOR CONSIDERATION:

1. Is it more productive (for example) to have 40 shared employees who work on stormwater part time or 14 full time stormwater employees?
2. Should all staff be hired at the outset or should employees be added as the utility develops.

3. WHAT ACTIVITIES DO STORMWATER UTILITIES FUND?

The motivation for creating a stormwater utility is to generate revenues that can pay for capital improvements that bring the stormwater infrastructure up to the required level of improvement. However, the revenues generated from the user fees ultimately contribute funds for several other uses. All but one of the utilities interviewed stated that O&M receives funding from the utility. Bellevue, Washington spends 17% of their budget on O&M each year.

However, Bellevue allocates 20% of their revenues to debt service to repay bonds that were issued during the first five years of the utility. Similarly, Aurora, Colorado allocates 35% of the budget to debt service. In addition to debt service, utility funds are allocated for taxes, land acquisition, permitting, pollution abatement, and street sweepers among other things. Tacoma, Washington utilizes 30% of its revenues for superfund site cleanup.

Of the utilities surveyed, most first allocate funds to CIP's and the staff that is required to design and construct them, and to the equipment and staff for O&M. Beyond this, expenditures are made based on the organization of the utility. If there is staff sharing, funds are channeled through several different departments such as engineering, sanitation, data collection, and lab research.

BUDGET CONSIDERATIONS

Required

- Capital Improvement Projects (CIP) and related staff
- Debt Service
- Operations and Maintenance (O&M) and related staff
- Water Quality Programs

Optional

- Other personnel
- Permits
- Taxes

FOR CONSIDERATION:

1. What are all of the expenses, both short term (five years) and long term of the stormwater utility?
2. Beyond the funding of O&M and CIP's, what activities will the utility need to fund?

4. ARE THERE ADDITIONAL SOURCES OF REVENUE?

Startup of a stormwater utility can be quite expensive and initial funding may not come from user fees. Cincinnati, Austin, and Tacoma each used bonds for the initial funding of the utility. Los Angeles continues the use of $15 million in bonds each year for CIP's that are paid for by property taxes. Charleston, South Carolina uses bonds as a last resort, relying on user fees as the primary source of revenues.

In addition to bonds, utilities utilize grants such as Environmental Protection Agency (EPA) grants and Transportation Equity Act For The 21st Century (TEA-21) funds, permit fees, development fees, ad valorem taxes and in-kind contributions. Depending on the priority that stormwater utility has within the larger scope of municipal services, the utility may receive more or less of the revenues from these sources.

POSITIVE AND NEGATIVE ASPECTS OF USING BONDS FOR CIP FINANCE

Positive

- Large sums of money are available for utility start-up.
- Large scale CIP's can be undertaken and constructed without straining budget needs in other areas of the utility.

Negative

- Debt service requires a large percentage of user fees or additional sources of revenues such as ad-valorem taxes.
- Public may not vote for a bond while they are faced with a new utility fee.

FOR CONSIDERATION:

1. What revenues are required for the initial start-up and required CIP's?
2. Can the user fees cover these expenses?

A SAMPLING OF STORMWATER UTILITY ORGANIZATIONAL STRUCTURES

LOCATION	UTILITY ORGANIZATION	POPULATION AND CUSTOMER NUMBERS	STAFFING NEEDS	ACTIVITIES FUNDED BY THE UTILITY	OTHER SOURCES OF REVENUES
Fort Collins, CO	separate utility for18 yrs. Now part of WaterUtility through a consolidation meant to reduce costs.	Population: 100,000 Customers: 100,000	Finance Maintenance Master Planning Water Quality Development Review CIP Management	CIP's Debt Service Operations and Maintenance	Bonds
Cincinnati, OH	Changed from DPW to Metro Sewer District	Population: 365,000 Customers: 86,000	Finance (5) Engineering (9) O&M (6) Admin. (3)	Overhead from the city O&M Permits New sewers	Bonds and in-kind contributions from Army Corps of Engineers
Bellevue, WA	Part of the city utility department that also includes water, sewer, solid waste, and cable	Population: 100,000	O&M (14) Admin. (5) Development (2) Engineering (4)	Personnel (26%) Debt service (20%) CIP's (5%) Interfund payments (11%) taxes (6%) O&M (17%) Equipment (3%)	Interest earnings, development review fees, interfund charges, resources forward, grants
Austin, TX	"Watershed management department" is a separate organization	Population: 464,000	180 employees in 4 divisions: Infrastructure Management watershed engineering water quality monitoring water quality development	Flood Plain office NPDES permits Personnel Other permits Flooding and erosion Complaints	Bonds for CIP's, EPA grants, ICTE funds, and permit fees
Charleston, SC	A division within the city's engineering department	Population: 100,000 Customers: 27,000	Director of Public services supervises the utility O&M (40) Admin. (2)	CIP's Administration O&M	Ad Valorem tax (funds new drains only) FIMA Bonds (last resort)

A SAMPLING OF STORMWATER UTILITY ORGANIZATIONAL STRUCTURES

LOCATION ORGANIZATION	UTILITY AND CUSTOMER	POPULATION NEEDS NUMBERS	STAFFING FUNDED BY	ACTIVITIES OF REVENUES THE UTILITY	OTHER SOURCES
Hillsboro Co., FL	Considered an additional project for the engineering division within DPW. Nothing additional created.	Population: 541,945 Customers: 173,000	No additional staff hired. Existing staff took on needed responsibilities.	CIP's Land Acquisition Design Permits Construction Master Planning	Ad Valorem taxes are used to cover CIP's. State funds from the water management district and the dept. of environmental protection are used as well.
Los Angeles, CA	Stormdrain system is owned and operated by DPW and is managed by the Bureau of Engineering and Bureau of Sanitation.	Population: 3.5 million	Bureau of Engineering (design and construction) (25) Bureau of Sanitation (O&M)	Pollution abatement CIP's	Gas tax funds from the state fund street drains. $15 million/yr. in bonds paid for by property taxes.
Aurora, CO	part of the water, sewer, and drainage utility	Population: 250,000	Storm drainage operations (4) Wastewater operations (4)	household chemical roundup donations to the community 35% debt service 20% CIP's 17 field employees 4 office people	Development fees
Boca Raton, FL	O&M is part of municipal services. Admin. and CIP's are part of Utility Services	Population: 66,000 Customers: 24,000 res. 2,500 comm.	Manager-1 CAD Technician-1 Inspector-1 No staff were added. Existing staff took on more responsibility.	Personnel GIS Street Sweeper CIP's NPDES Permits O&M Joint project agreements with the city	None
Tacoma, WA	Part of DPW	Population: 250,000 Customers: 64,258 parcels	customer service-1.5 engineering-6 water quality-2 lab personnel-20 shared O&M staff	30% superfund remediation CIP's O&M debt service taxes	The utility was started with bonds. Paid off after 5 years.

BRIEFING PAPER #4

Assessment

There are over 150 stormwater utilities in existence today, and almost as many ways of charging customers. This paper presents a sampling of assessment methods, examines the different elements that go into them and discusses why there is such variation.

INTRODUCTION: WHAT IS MEANT BY "FEE ASSESSMENT?"

The stormwater utility approach is based on the principle that polluters should contribute to covering the costs of correcting the environmental problems they cause. In this case, property owners pay a fee to the utility for controlling the environmental impacts of stormwater runoff caused by development on their land. Utility charges are considered "user fees" — fees for using the municipal stormwater management system.

How much property owners are charged corresponds to how much they use the system, indicated by how much runoff they contribute to it. Typically, the more runoff one generates, the more one pays to the utility. The terms fee assessment and assessment method are used here to refer to how these payments are calculated. Assessment involves three things:

- a fee structure;
- a rate, and
- data collection.

Each of these will be explored below.

I. THE FEE STRUCTURE

In the more common utilities, such as water and electricity, meters track consumption of those commodities and customers are charged precisely according to what they use. With respect to stormwater, use of the municipal runoff management system is measured by each property owner's contribution to the

system — the amount of runoff generated on their land. But unlike the case with water and electricity, it is not possible to meter runoff, and even making educated estimates can involve complicated calculations. The labor and cost involved in making such calculations can place an undue burden on the utility and severely cut into its capacity for generating funds for stormwater management. So utilities have come up with other ways of computing customer charges and ensuring that those charges relate to stormwater contributions. These methods are what is meant here by the term fee structure.

"You Pave, You Pay": Impervious Surface as the Basis for Most Fee Structures

All property with the exception of wetlands, even undeveloped land, yields stormwater runoff. But runoff is dramatically increased by the impervious surfaces created by development — specifically buildings and pavement. This tight correlation has led to the widespread use of impervious surface as the basis of stormwater fee structures. Rather than measure actual runoff, the vast majority of stormwater utilities charge their customers according to the amount of impervious surface on their property. How they go about calculating impervious surface accounts for some of the differences in fee structures.

The Fairness – Ease of Implementation [Equity-Efficiency] Spectrum

Measuring impervious surface is less complicated than calculating runoff estimates. But when done on thousands of parcels, it can still be costly and utilities have developed ways of simplifying the process. For example, some stormwater utilities figure that most residential properties are similar, so they charge all residential customers a single flat fee based on a community average. This does away with the need to measure the impervious surface on the majority of a community's parcels. At the same time, it also does away with some of the fairness inherent in a user fee system: the owner of a 5,000 square foot house with a long three car driveway and paved tennis court would be charged the same amount as the owner of an 1,800 square foot row house with just enough space for a single vehicle, although the more developed property would contribute significantly more runoff.

Fairness is built into stormwater utility fees by increasing the complexity of a utility's fee structure. For example, the flat fee scenario given above could be enhanced by separating residential customers into two or more categories based on their property size and other characteristics. This would involve additional data collection and processing — the more equitable a fee structure is, the more difficult and costly it is likely to be to implement. Determining a fee structure can be seen as picking a point in a spectrum where fairness and ease of implementation, or equity and efficiency, are at opposite ends.

Incentives as a Byproduct of a Fair System

In the fairest or most equitable stormwater fee structures, owners of those properties contributing the most runoff would be charged the highest fees. By extension, reducing runoff would lead to reduced fees. Utility customers would therefore have an incentive to reduce the amount of runoff produced on their property by either reducing impervious surface or implementing stormwater best management practices (BMPs) to contain and process stormwater on site — before it "runs off" and contributes to pollution problems. Equitable systems offer property owners a degree of control over how much they pay in stormwater management fees to the extent that they can control stormwater flow on their land.

Components of a Stormwater Fee Structure

Fee structures are built up of different components, some of which can be used in combination while others are mutually exclusive. Just which elements go into building a fee structure is based on community needs and preferences. The process can be somewhat confusing and carries a great degree of variability: one study showed that charges could vary by as much as 60 percent for a given parcel depending on the fee structure used.

Here is a "menu" of commonly used components. Examples of how they are used to make up different fee structures appears in table 4 at the end of the section.

1. Customer Classifications: All assessment methods acknowledge that different types of land uses yield different amounts of runoff, and therefore apply different rates or assessment formulas to them. Some divide customers into just two classes: residential and non-residential property. Others recognize three — single family, multi-family residential and non-residential — or four, adding an undeveloped category. Still other utilities break out customers into as many as eight categories, with a different rate or assessment formula for each.

Customer classifications may correspond either to land use categories (i.e. single family residential, commercial, industrial, etc.) or intensity of development (i.e. undeveloped, light, moderate, heavy).

FOR CONSIDERATION:

Stormwater utility fee structures use customer classifications in order to allow a simplified billing system to recognize basic differences in runoff contributions by land use.

- What is the composition of land use types to be covered by the utility under consideration?
- What types of customer classes should be considered?
- How many customer classes would be reasonable and appropriate?

2. Intensity Development Factors (IDFs): The term Intensity Development Factor refers to the fact that the more intensely developed a parcel is, the greater the amount of impervious surface, and the more runoff, it will have per acre. IDF is represented as the percentage of a parcel typically developed in a particular land use category. For example, a factor of .85 for commercial property means that on average, 85 percent of a parcel in that classification is developed — covered by building footprints, parking, driveways and other impervious surfaces. Residential property with a factor of .20 will have 20% of the lot covered by impervious surface.

Assigning IDFs to land use categories involves measuring the percentage of impervious surface on a statistically valid sample of properties, then averaging the results.

When a parcel's gross area is multiplied by its IDF, the result is a reasonable estimate of the amount of impervious surface on the property. IDF's are not necessary in assessment formulas which use actual measurements of impervious surface on individual parcels. They are sometimes used as a factor in creating customer classifications. (See Tables 1, 2, and 3, below.)

FOR CONSIDERATION:

- What is the composition of land use types to be covered by the utility under consideration?
- Should IDFs be used indirectly, as a factor in creating billing or rate classes (e.g. Bellevue) or directly, as a component of billing equations?
- How should customers be classified?

3. Runoff Factor or Runoff Coefficient: This is a number representing how much stormwater runs off a parcel for a particular land use during a storm event. A table of runoff factors for each land use type may be available from the municipality.

Like IDFs, runoff factors are used to strengthen the relationship between what a landowner is billed and the amount of runoff produced on the parcel. Also like IDFs, they are used as a rationale for separating properties into customer classes and are incorporated into billing equations.

Most assessment methods use either one or the other, not both. IDFs are more easily understood by utility customers, while runoff factors provide a more accurate indication of runoff quantity.

FOR CONSIDERATION:

- Would the use of IDFs or rate factors better serve the utility under consideration? Consider the tradeoff between ease of use and comprehension versus accuracy.

Tables 1, 2 and 3 show examples of how customers may be classified by land use or intensity of development.

Examples: Use of Customer Classifications and IDFs

In Cincinnati's fee structure, Class A and B properties are both charged a flat fee, although the fee for Class B parcels is 1.4 times that of Class A parcels. Class C properties are charged individually according to a formula that uses both the property's size and IDF — parcel area is divided by 2,000 then multiplied by the IDF to get a figure that is multiplied by the flat fee rate.

TABLE 1. (CINCINNATI, OHIO)

LAND USE	CLASS	INTENSITY DEVELOPMENT FACTOR
Commercial	C	.85
Industrial	C	.75
Multi-family	C	.60
Transportation	C	.50
Institutional	C	.40
Residential (up to 10,000 sq. ft.)	A	.25
Residential (> 10,000 sq. ft.)	B	.20
Agricultural	C	.08
Park	C	.05

In Bellevue's fee structure, each parcel is charged individually by property size. The utility employs a different rate for each Intensity of Development category — e.g. undeveloped properties are charged $.30 for every 2,000 square feet of land area while very heavily developed properties are charged $4.26 for the same land unit. This figure is then added to a base charge of $1.86.

TABLE 2 (BELLEVUE, WASHINGTON)

LAND USE	INTENSITY OF DEVELOPMENT (CUSTOMER CLASS)	PERCENTAGE OF IMPERVIOUS SURFACE
Undeveloped	Undeveloped	0
House on one acre or more	Light	0-35%
Typical Single Family Lot	Moderate	>35-50%
Multi-family	Heavy	>50-70%
Industrial/Commercial	Extra heavy	>70%

TABLE 3 (DENVER, COLORADO)

CATEGORY OF DEVELOPMENT (CUSTOMER CLASS)	RATE FACTOR (IDF)
Very Light	0.25
Light	0.40
Moderate	0.60
Heavy	0.80
Extra heavy	0.95

In this example, Denver assesses a flat fee for each single family residential parcel of 12,000 square feet or less. For larger parcels, individual charges are calculated by multiplying the total area by the rate factor (IDF) for the parcel development category by the base rate. The base rate for the utility's operations and maintenance fund is $0.0005850 per square foot per month.

4. Billing Unit or ERU: Phone companies charge by the minute. Water utilities charge by the gallon. Some stormwater utilities charge by the square foot of land area, as seen in the Denver example above. Others have a charge per every 500 square feet or every 2,000 square feet, while others charge by the acre or fraction thereof. Many stormwater utilities, however, develop their own billing unit specific to the stormwater utility. This is called an ERU — equivalent runoff unit — and becomes part of the rate, which is expressed as $X per ERU.

Like many other aspects of stormwater utility fee structures, the size of an ERU and how it is calculated varies from utility to utility. Typically, ERUs are employed in utilities which use a flat rate for residential properties. The ERU is computed as either the average residential lot size or the average amount of impervious surface on each residential lot; each single family residence is then assessed at the flat rate of 1 ERU.

For this reason, some utilities define the ERU as an "equivalent residential unit" or use another term such as EDU (equivalent dwelling unit), SFU (single family unit) or SFE (single family equivalent). It is generally believed that utility customers can more easily understand charges when expressed in terms of a single family residence. Using single family units also facilitates billing since they represent between 60% and 80% of all parcels.

Where ERUs are used, charges for multifamily, commercial, industrial and other properties are calculated by dividing the size of the property to be assessed by the size of the utility's ERU (i.e. the average residential lot size) to get an ERU multiple. For example, in a scenario where the ERU was 10,000 square feet, a 100,000 square foot commercial property might be defined as having 10 ERUs.

It is important to note that there is no uniform definition of an ERU — each utility sets its own definition and uses it to make billing calculations in its own way. Cincinnati's stormwater utility defines its class A residential properties (< 10,000 s.f.) as 1 ERU and its class B residential properties (>10,000 s.f.) as 1.4 ERUs, but does not use the residential ERU size in determining the number of ERUs for each class C property. Instead, this is calculated by dividing the class C parcel size by 2,000 and multiplying by the IDF for the parcel's land use category to get the resulting number of ERUs.

The one consistent element of ERU use is its function as a tool for applying a rate. This is convenient for implementing rate changes: a utility's fee structure and assessment formulas may remain the same while the dollar amount per ERU is adjusted.

FOR CONSIDERATION:

- Is use of an ERU calculated as a residential unit average preferable to other base units, such as a charge per square foot, per acre, or for every 2,000 square feet of property?
- Should the billing unit be based on total property size or amount of impervious surface?
- What would the size of an ERU be for the utility under consideration if calculated as average residential parcel size? What is the range of deviation from this average?

5. Flat Fees: A flat fee is a stormwater utility charge that is the same for all property owners within a particular land use classification. It is most commonly used for residential customers, although there are instances where a flat fee has been used as the sole billing mechanism covering all property classes. Flat fees are the simplest of all stormwater utility assessment methods to utilize, as they do not require individual property measurements or involve complicated assessment formulas. However, they offer the lowest degree of correlation between utility payments and runoff contribution from the property — and consequently rank low on the issue of fairness and ability to provide incentives for property owners to minimize runoff.

Some utilities have used flat fees during their start-up period, moving over to more individually-based billing systems as data for making parcel area and impervious surface calculations became available.

FOR CONSIDERATION:

- Is the efficiency provided by flat fees a high priority for the utility under consideration? Does it justify foregoing the equity and incentives provided by other fee structures?
- Are flat fees desired:
  - for one property class or all? which ones?
  - for the utility start-up period or as a permanent feature?

6. Calculated or Individual Fees: The opposite of a flat fee is a calculated fee, where each individual property is assessed an amount according to a specified formula. Often, utilities charge flat fees for residential customers and calculate the charge for larger, more intensely developed properties. Assessment formulas can be based on:

- gross parcel area. Some utilities charge customers based on gross parcel area — i.e. $X per Ys.f. or Yacres. IDFs or runoff coefficients are used only as a factor in creating create customer classes. This is a simple approach based on the rationale that the quantity of runoff or impervious surface is proportionate to property size. Its success depends on the careful construction of property classifications.
- measured impervious surface. In this scenario, customers are charged according to the precise quantity of impervious surface on their property as represented by building footprints and paved areas. This approach is the most labor intensive, but also the most equitable.
- estimated impervious surface. Fee structures often use a property's gross area multiplied by its land use category IDF to provide an estimate of the amount the amount of a parcel's impervious surface in the absence of detailed measurements.
- runoff quantity. Runoff coefficients or factors are applied to individual parcel size.
- water use, water meter size, and number of rooms: These alternative fee structures work with data from Departments of Public Works and property assessors offices that is easy and inexpensive to obtain and to process. However, they are not as strongly correlated with stormwater runoff as other billing systems and are therefore used infrequently.

Some calculated charges include a small fixed fee added on to each bill regardless of property size or other basis for billing. An example is the utility in Bellevue, Washington, one of the first stormwater utilities ever established, which charges each customer $1.86 every two months in addition to an amount based on gross parcel area. With a rate of $0.30 per 2,000 s.f., the fee for a 10,000 s.f. property would be calculated like this:

10,000 s.f. / 2,000 s.f. = 5 billing units
5 X $0.30 = $1.50
$1.50 + $1.86 = $3.36 = total user charge

A 50,000 s.f. parcel in the same land use category would be charged:
50,000 s.f. / 2,000 s.f. = 25 billing units
25 X $0.30 = $7.50
$7.50 + $1.86 = $9.36 = total user charge

The inclusion of a fixed charge in a calculated fee structure ensures the utility a minimum revenue base. It may also be viewed as covering the stormwater contribution of impervious surfaces held in common ownership, such as the public road system.

FOR CONSIDERATION:

- What data is readily available as a basis for stormwater charges?
- How do the different methods fit with the community's targeted point on the equity-efficiency spectrum?
- Would the inclusion of a fixed charge be appropriate?

7. Credits and Incentives: As noted above, fee systems where charges are tightly correlated with runoff quantity provide an incentive to property owners to manage stormwater on site. Some utilities increase this incentive by offering credits which lower the fees charged to property owners using stormwater runoff "best management practices" (BMPs). Credits can be given for structural BMPs, such as a runoff retention pond on a campus-style industrial park, or non-structural practices, such as disconnecting a residential roof gutter to keep the runoff out of the municipal sewer. They can also be rewarded either for reducing the quantity of stormwater runoff on a parcel or for improving its quality.

In addition to rewarding utility customers, credit programs can save municipalities money in the long run on stormwater management costs. They increase the equity of the fee structure and are also good for community relations since customers are given options for lowering their utility bills.

Despite these advantages, incentive programs and credits are not yet widely used. A 1996 survey conducted by Black and Veatch Management Consultants found only 26% of utilities studied nationwide using credits to promote runoff quantity reductions — and only 11% had fee structures that addressed runoff quality. This may be due to the administrative work involved in the implementation of incentive programs. Most utilities surveyed expressed interest in exploring these features.

FOR CONSIDERATION:

- Is a credit program desirable for the utility under consideration?
- Should it focus on runoff quantity, quality or both?
- Should the program be limited to large-scale, structural BMPs, or extend to homeowners for non-stuctural methods?

8. Low Income Credits: Some stormwater utilities offer fee reductions or exemptions to property owners who can show financial hardship. In practice, this only applies to residential properties, not businesses.

TABLE 4. A SAMPLING OF STORMWATER UTILITY FEE STRUCTURES

UTILITY LOCATION	CUSTOMER CLASSES	IDFS	RUNOFF FACTORS	BILLING UNIT	FLAT FEES	CALCULATED FEES	CREDITS	COMMENTS
Bellevue, WA	6 undeveloped, light, moderate, heavy, extra heavy; wetlands (not charged)	IDF's used as basis for customer classification	———	per 2,000 s.f. of gross land area	———	each customer class charged a different rate for each 2,000 s.f. of gross land area	75% credit to customers meeting low income criteria	a small, uniform base charge is added to every bill, independent of calculated charges
Cincinnati, OH	9 A-res. <10,000 s.f. B-res. 10,000 s.f.+ C-park, agricultural, institutional, transportation, multi-fam., industrial, commercial	used for class C billing categories	———	ERU	class A = 1 ERU; B = 1.4 ERU	class C = gross parcel area divided by 2,000 X IDF = # of ERUs		the 7 sub-categories of class C customers in effect puts the billing classes at 9 rather than 3
Denver, CO	5 very light; light; moderate, heavy, extra heavy; wetlands (not charged)	termed "rate factor" and used in billing equation	runoff coefficients used in assigning parcels to customer classes	per s.f.	———	gross parcel area is multiplied by rate factor, then by the s.f. rate; the portion of single family parcels in excess of 12,000 s.f. is discounted 75%		different s.f. rates are used for customers in different drainage basins to correspond with capital improvement costs
Tacoma, WA	5	———	———	every 500 s.f. of gross area		parcel square footage is divided by 500 and multiplied by rate		fixed charge is added to each bill
Hillsboro County, FL	3 single family; multi-family; non-residential	———	———	1.5 s.f. of impervious surface (non-res. property only)	multi-fam. units are charged half the rate for single fam. homes	used for non-residential — the s.f. rate is applied to total impervious surface		
Charleston, SC	4 undeveloped (no charge); single family; multi-family; non-residential			ERU = 2,200 s.f. (average residential impervious)	single fam. = 1 ERU; multi-fam. = .75 ERU per unit	used for non-res. — total impervious surface is divided by 2,200 (ERU size); then ERU rate is applied	up to 30% reduction for meeting stormwater management standards	non-res. semi-pervious surface areas are charged at 1/2 the base rate
Austin, TX	2 residential; commercial			charges are per acre	used for all res.; charge = .1853 the per acre rate	gross parcel area is multiplied by 2; then the per acre rate is applied	properties managing stormwater entirely on site are exempted	
Charlotte, NC							25% credit for structural BMPs	
Roseville, MN							up to 75% credit for structural BMPs	
Los Angeles, CA	1 one formula for all properties	———	used in billing equations	EDU	———	number of EDUs per parcel is calculated by multiplying parcel area by its runoff factor, then dividing by 0.0637		LA's divisor of 0.0637 is the proportionate runoff from the average single family parcel

II. THE RATE

One important component of a utility's fee structure not discussed above is the rate. A full exploration of stormwater utility rates and how they are set will be presented in a separate briefing paper. For now, it is necessary only to look at what a rate is, and how it works with the utility's fee structure.

The utility rate is the amount of money charged customers for each billing unit or ERU for a specific time period.

Calculating stormwater charges can be seen as a sequenced process, where rates enter into the second step:

1. Identify the number of billing units (ERUs) for the customer's parcel.
2. Multiply the number of billing units (ERUs) by the rate.
   CUSTOMER CHARGE = RATE x # OF BILLING UNITS/ERUs
3. Add fixed charges or subtract credits as appropriate.

Some utilities have one rate which is applied to all customers. For example, Cincinnati's stormwater utility charges $2.11 per ERU per month regardless of customer class. Non-residential properties in Hillsboro County are charged $0.01 for each 1.5 s.f. of impervious surface. In contrast, both Tacoma and Bellevue have different rates depending on the property's land use category or intensity of development factor. In Tacoma, property in the undeveloped category is charged $0.1219 per 500 s.f. per month, while the rate for moderate and very heavily developed property jumps to $0.5008 and $0.9749 respectively. Bellevue's rates range from $0.30 to $4.26 for each 2,000 s.f. of property, depending on its development category.

Whether a utility applies the same rate to each parcel or has different rates for each land use category appears to depend on where intensity development or runoff factors are used. If they are used in the equation for calculating a parcel's billing units, then a single rate is appropriate. If not, having a range of rates serves as an alternate way of taking intensity of development factors into account.

FOR CONSIDERATION:

- should the utility under consideration have one rate, or a range of rates covering different land use categories?

III. DATA COLLECTION

All stormwater utility fee systems require data to make billing calculations. Some systems work only with gross parcel area, while others use figures on impervious surface and site features that control runoff. Some systems require parcel specific data only for non-residential properties, while others use parcel specific data for all properties charged. The kind of data an assessment method uses depends on what is available, and on community preferences along the equity-efficiency spectrum.

Sources and Methods

Stormwater utility billing data is typically gathered from one or more of the following:

Assessor's Records: This data source is readily available to all communities and is essential for providing information on parcel ownership, land use and size. Impervious surface coverage may also be calculated from building footprints, and some assessors maps show driveways and parking areas as well. Assessor's records are insufficient, however, because they do not take into account tax exempt property that may be charged by the utility. Additionally, inaccuracies in the assessor's data can result in fee inequities and petitions for fee adjustments.

Water and Sewer Bills: These can be used to identify customers who may not show up in assessor's records. Also, as noted in the discussion on fee structure, they are sometimes used as the basis for calculating stormwater charges.

Aerial Photography: Recent aerial photographs of a community provide detailed and accurate information on development patterns, land use and impervious surface. They can also document features that warrant utility credits, such as detention/retention basins or vegetative swales. Several methods can be used to generate data from the photographs:

- Geographic Information System (GIS) mapping. Parcel by parcel figures on impervious surface can be obtained when the information from aerial flyovers is mapped in GIS and correlated with parcel lot lines.
- Random Dot Method. The percentage of impervious surface on a property can be calculated by overlaying an aerial photograph with a grid of random dots. This is done by dividing the number of dots lying on impervious surface to the total number of dots on the entire parcel to get a ratio that is, essentially, the property's intensity of development factor. For example, a 400 dot parcel with 100 dots covering impervious surfaces would have an IDF of .25 (100/400).

On Site Calculation: This is the most accurate means of obtaining measurements of impervious surface, and is facilitated by a wheel connected to a distance counter. Although labor intensive, it can have a customer relations benefit in that property owners see for themselves the process on which their charges are based.

FOR CONSIDERATION:

- What sources of data are readily available?
- Are there data sources, such as aerial photos or GIS maps, that might be usable with some additional work — e.g. overlaying parcel lot lines?
- What kinds of data are needed to implement the community's preferred fee structure?

APPLYING THE DATA

Stormwater utility data collection can be performed either on a parcel by parcel basis or through sampling.

- Both ERUs and flat fees (i.e. 1 ERU) are usually based on average residential parcel size or average residential impervious surface. The averages can be computed from a statistically valid sample.
- IDFs for land use categories may also be computed from a statistically valid sample of parcels in each classification.
- Individually computed charges require parcel specific data, either for gross area or impervious surface.

FOR CONSIDERATION:

- To implement the preferred fee structure, which data needs to be collected on a parcel by parcel basis? (e.g. all gross area, non-residential gross area, non-residential impervious) Where can sampling be used?
- Does the preferred fee structure require more data than is readily available? How might it be modified so that additional data collection is unnecessary?

CONCLUSION: CRITERIA FOR EVALUATING FEE ASSESSMENT METHODS

Building a stormwater utility fee structure can be a complicated task. It is made easier if a community has clear priorities to against which to measure its choices. Camp, Dresser, & McKee, Inc. developed a set of eight evaluation criteria for a study of alternative assessment methods in Tampa, FL. They are:

1. Charges should be based on a reasonably accurate, technically defensible measure of runoff.
2. The data base used to calculate charges should be accurate.
3. Utility users in different land use classes should pay in proportion to the runoff their classes generate relative to others. That is, rates should be the same for all classes.
4. Users within a class should pay in proportion to their contribution to the total runoff generated by the class.
5. The fee structure should be legal and politically acceptable.
6. The fee structure should be flexible. For example, an the rate for a given class of users be changed without having to reprogram the entire fee structure?
7. The system should generate adequate revenues. This criterion comes into play when setting the rate.
8. The initial costs of implementing the utility should not be exorbitant. For example, fee calculations should make use of existing data.

These are not the only criteria. Nor are they universally applicable. For example, as seen above in the discussion on rates, some communities apply different rates to different classes — in opposition to criterion number 3. Other criteria to consider include:

- The fee structure should be easily understood by utility customers.
- The fee structure should provide opportunities and incentives for users to reduce their charges by implementing stormwater best management practices.
- Utility charges should not place an undue burden on low income households.

FOR CONSIDERATION:

- Which criteria are most important to the community?
- Are there criteria not mentioned that should be considered?

Other Issues: Who Do We Charge?

Once it is established how people will be charged, it is necessary to determine who will be charged. The following information describes some of the issues that communities have dealt with while developing their utility.

- **Residential vs. Commercial / Industrial Property Owners:** While both residential and commercial/ industrial property owners are charged, they are charged differently. It is important to realize that the properties in the commercial / industrial land use category will be responsible for larger fees than the single family homeowner. While many home owners will notice a small increase of only a few dollars in their utility bills, the business community will see a significant increase of hundreds of dollars. This discrepancy is due to the fact that residential properties have a smaller gross area as well as less impervious surface. While many homes have yards surrounding them, most commercial properties do not have significant green spaces, thus giving them a higher percentage of impervious surface. As mentioned previously, the large fees charged to commercial / industrial properties can provide those properties owners with an incentive to install technologies that earn them credits and a reduction in the charge. The residential fee is too negligible for these incentives to have the same effect.
- **Property Owners vs. Tenants:** In most cases, the property owner, not the tenant, receives the utility or tax bill that includes the fee for stormwater utility. However, just as a tenant is charged for water and trash removal, the landlord can incorporate the stormwater utility fee into the monthly rent.
- **Tax Exempt Properties:** In 1969, the Colorado Appellate Court decided, "he who sends more water downhill than would naturally flow must provide for it," (Shoemaker et al. p. 49). How-

ever, those communities that include the stormwater utility fee on the property tax bill do not bill properties that are tax exempt, despite the fact that those properties contribute to the stormwater flows. The problem that arises in this billing structure is that the failure to bill properties with tax exempt status requires that the shortfall be subsidized by the non-tax exempt customers. However, case law in this area generally establishes that since stormwater charges are a user fee rather than a tax, it is appropriate for the utility to charge tax exempt properties in the billing process. The City of Los Angeles maintains that unless there is a valid cost based reason that justifies exempting certain properties, as in the case of a wetland or a lake or a property that maintains its own on-site drainage system, there is no reason for exemption from the user fees.

EXAMPLES OF USER FEE ASSESSMENT METHODS

Land Based Rate Policy

The land based rate policy is an assessment method that charges a fee based on the size of the property, its land use classification and the amount of stormwater that runs off of it during a storm event. This policy applies the same runoff factor to all property owners within a specific land use classification. In turn, the land use runoff factor does not reflect the specific contributions of stormwater from specific customers because it ignores the degree of variance between parcels within one class, however, it does recognize the different sizes of different properties, increasing the equity of the rate structure.

Using gross area for each property is easier and less costly than using the area of impervious surface on each property because the assessor's office has gross area data on hand whereas impervious surface data has to be measured and recorded. Some utilities such as Los Angeles, use an average gross area measurement for residential properties because there are so many properties in the database. While this reduces time and effort, it also reduces the equity of the rate structure. The land based rate policy utilizes the following information:

- Gross Area
- Base Unit
- Customer Classification
- Runoff Factor

The fee is determined using the following equation:

Gross Area X Runoff Factor (based on the customer classification) X Base Unit = Fee

Gross area X Runoff Factor X[Gross araea X Runoff Factor]/average gross areaXrunnoff factor

Before this calculation can be completed, the base unit has to be determined. While this calculation seems to be a simple task, it is actually an adventure unto itself. Los Angeles calculates the base unit by multiplying the gross area by the runoff factor and dividing it by the Basic Assessment Unit or BAU.

The BAU represents the estimated amount of runoff derived from a single family residential unit. It is calculated by multiplying the average residential property square footage (for Los Angeles this is 6,650) by the runoff factor for single family properties (for Los Angeles this is .4176). The BAU remains constant for EVERY property within the utility's jurisdiction.

THEREFORE:

BAU= 6,650 X .4176 = .0637
AND:
Base Unit = (Gross Area X Runoff Factor)/ BAU

Impervious Area Base Rate Policy

On the other side of equitable assessment methods is the impervious area base rate policy. Instead of basing the rate on gross area, this method bases the rate on the percentage of impervious surface that covers a property or the Intensity Development Factor or IDF. Like the land area based policy, the impervious area base rate policy has options for various levels of equity. On the most equitable side, each property's impervious surface is measured and that area is used in the rate structure. The impervious area base rate policy utilizes the following information:

- Intensity Development Factor (IDF)
- Base Unit
- Customer Classification

Utility Rate = % of impervious surface or IDF X $/base unit

Base Unit = IDF X gross area

However, for the sake of conserving time and money, it is possible to measure a sample of properties within a particular land use classification and use the average impervious surface of the sample as the number that is plugged into all rates. This average of impervious surface is called the Intensity Development Factor or IDF. This method requires a longer startup time than the land based method because the impervious surface area measurement of each property has to be recorded. The end result is reasonably accurate, easy to defend technically, and is a very equitable method because it can account for variances in parcels within a single land use category.

Notice that this equation for the utility rate specifies dollars per base unit. This is a calculation that can be applied to either land based or impervious surface based assessment methods. This equation is calculated by dividing the revenue requirements for the utility stormwater programs by the total number of base units in each land use category. The equation is:

$ / Base Unit = R (revenue requirements)

IDF (for each land use) X Area (total area in one land use category)

Important Points to Consider

What level of equity is important to our community?

- Individual Property measurements vs. Customer Classification Averages
- Billing to tax exempt customers including government properties, roads, railbeds

What type of data is available?

- Land based assessment method vs. Impervious area based assessment method

BRIEFING PAPER #5

Rate Setting

Most of the urban communities in the Pioneer Valley face a large gap between available funds and the financial requirements of correcting combined sewer overflow (CSO) problems and implementing other stormwater management measures. In the near future, urban communities will also have to address increased requirements to manage the quality of storm water through the U.S. EPA's proposed NPDES Storm Water Phase II regulations. These new regulations will require municipalities in the Pioneer Valley to adopt additional measures including implementing best management practices, but most local governments have not yet developed comprehensive programs or funding sources to address these issues. The creation of a storm water utility gives cities and towns a mechanism to directly raise funds to support the growing needs of stormwater management.

Throughout the country stormwater management has mainly been financed with general revenues from property taxes. The revenue raised for stormwater management using this method has often been inadequate because stormwater management is usually regarded as a low priority relative to other local programs. In the last nineteen years, some communities have instituted a stormwater utility charge or "user" charge as a more consistent and reliable way to raise revenues specific to stormwater management. The stormwater utility approach is useful because it creates a stable, secure source of funding, and it is more equitable than using general tax revenues. The American Public Works Association (APWA) stated in *Urban Stormwater Management*: "The user charge and the utility concept are the most dependable and equitable approaches available to local governments for financing stormwater management."

The rate that a stormwater utility charges is the key to raising adequate funds in a manner that is perceived as fair and equitable to ratepayers. This paper will discuss how stormwater utilities can set rates that meet the revenue requirements of stormwater management within the confines of the political and

public relations realities in communities. Ultimately the amount of revenues that a stormwater utility can generate is governed by the willingness of people to pay for stormwater management.

The Stormwater Rate Structure

In a previous paper as part of this project, *Briefing Paper #4—Assessment*, the different assessment methods that can be used for a stormwater utility were discussed. The fee assessment is the overall process which is used to calculate individual payments. The rate is an important component of a utility's fee structure. The utility rate is the amount of money charged customers for each billing unit or ERU for a specific time period. Calculating stormwater charges can be seen as a sequenced process, where rates enter into the second step:

1. Identify the number of billing units (ERUs) for each parcel or identify gross area of impervious surface area of each parcel.
2. Multiply the number of billing units by the rate:
   CUSTOMER CHARGE = RATE x # OF BILLING UNITS/ERUs
3. Add fixed charges or subtract credits as appropriate.

Setting the rate is not as simple as picking a number out of the air. A method needs to be developed that clearly links the fee charged to the contribution of stormwater each parcel makes to the stormwater system. In a recent survey, four of the nineteen utilities surveyed reported legal challenges—all questioning the rate structure (Sediment and Stormwater Administration of the Maryland Department of the Environment). In these court cases the legal standard that emerged can been summarized as: "Charges must be fair and reasonable and bear a substantial relationship to the cost of services and facilities." (Cyre, 1986) This standard defines two important issues in setting the rate:

1. Reasonably accurate estimates of runoff will suffice—runoff does not need to be measured precisely.
2. The standard does not mention benefits or beneficiaries so the utility rate systems may be based on cost and not benefits.

The second point here is very relevant to setting the rate for a stormwater utility. Legally, the rate must be set at a level to meet estimates of the revenue requirements for stormwater management. However for communities with CSO problems, a rate that would fulfill the revenue requirements may not be feasible because of the political reality of citizens' negative feelings about government spending. If residents are feeling over-burdened by existing federal, state, and local taxes and because of limitations imposed on local government to increase taxes, the introduction of a high stormwater fee may not even be an option for city governments. The capital costs of CSO correction projects are usually significantly larger than the revenues of a storm water utility. In these cases, the estimates of revenue requirements for stormwater management may be used to combine funds from different sources and show that the stormwater fee rate has been set to meet only a portion of the needed revenue.

Setting the Rate

Depending on the assessment method used, the rate is either a constant number which is applied to all customers or the rate varies depending on the contribution of stormwater each parcel or type of parcel (i.e. residential, commercial, etc.) makes to the stormwater system. Whether a utility applies the same rate to each parcel or has different rates for each land use category depends on whether intensity of development factors (IDF) or runoff factors are used. Intensity of development is a rating of how much impervious surface a parcel has—for example retail malls would have higher IDFs because of large paved areas. If IDFs are used in the equation for calculating a parcel's billing units, then a single rate is appropriate. If not, having a range of rates serves as an alternate way of taking intensity of development factors into account.

A constant rate is used either for simplicity or when the assessment method already takes into account the degree to which a parcel contributes stormwater to the stormwater system by actually measuring the

impervious area or by applying an "intensity of development factor" according to the designated use of each parcel. For example, Cincinnati's stormwater utility charges $2.11 per ERU per month regardless of customer class. This constant rate keeps the billing system simple but not as accurate in terms of measuring an individual parcels contribution to the problem. Hillsboro County, in contrast, uses a constant rate of $0.01 for each 1.5 square feet of imperious surface. In this case the constant rate is used in combination with a more precise measurement of individual parcels contribution to the problem.

Variable rates are used to take into account how different land uses contribute more or less stormwater runoff to the stormwater system. In these cases the rate is used to make the stormwater fee more equitable. In both Tacoma and Bellevue, WA there are different rates depending on the property's land use category or intensity of development factor. There are five different rate categories in Tocoma:

- Undeveloped (virgin property)
- Light Developed (Cemetery)
- Moderate (Residential)
- Light Commercial (Light Commercial, gravel parking, church, schools)
- Heavy Commercial (Heavy Commercial including all buildings and paved)

In Tacoma, property in the undeveloped category is charged $0.1240 per 500 s.f. per month, while the rate for moderate and very heavily developed property jumps to $0.5070 and $0.9920 respectively. Bellevue's rates range from $0.30 to $4.26 for each 2,000 s.f. of property, depending on its development category. Variable rates can be powerful tools to add a degree of equity to the billing process, but they must be used carefully. Any changes in the variable rates can shift the burden between different land owners—residential, commercial, industrial, etc. These changes may cause strong reactions by the public with potential political and legal consequences.

Revenue Requirements

One of the first steps in setting the rate for stormwater utilities is making an accurate estimate of revenue requirements and identifying potential sources of revenues. The range of activities financed by stormwater utilities varies greatly. (Please see *Briefing Paper #3—Management* for a longer discussion of this subject.) Some utilities fund both Operation & Maintenance (O&M) and capital projects with utility revenues while others fund only planning and O&M with utility funds and use general obligation bonds that are repaid with property tax revenues for capital improvements. Others wrap the maintenance costs in a percentage of debt for capital improvements. Estimates of costs for King's County, Washington ranges from 0.43% of total debt for basic maintenance of all facilities to between 3% and 10% for a more comprehensive stormwater management program including implementation of best management practices. In another comparison, the cost was estimated based on land area and it was found that the cost in most cities was: $15 to $25 per gross acre for basic stormwater administration, engineering, and reactive maintenance and $100 or more for comprehensive stormwater management that includes drainage master plans, preventative maintenance, and major capital improvements. (Cyre, 1987)

Other potential sources of revenues should also be identified as part of the utilities financial plan. Financing methods for each of the utility's functions and the amount to be raised should be specified in order to set the rate.

TABLE 1. A SAMPLING OF STORMWATER UTILITY RATES AND RECENT CHARGES

UTILITY LOCATION	ASSESSMENT METHOD	CURRENT RATE	RATE CHANGE IN PAST 2 YEARS	PUBLIC REACTION	REASON FOR RATE CHANGE	PERCEPTION OF RATE FAIRNESS AND COMMENTS
Cincinnati, OH	ERU	Class A $26.52/yr Class B $37.13/yr Class C 2.20/ERU	Yes: 1999 +4.7%	Very little response —change not significant	Due to emergency projects that need immediate funding	n/a
Denver, CO	Charge based on density ratio and ratio of impervious area to total parcel area.	Ranges from $0.006 to $0.0188 per sq. ft. of impervious area based on impervious area ratio.	Yes: 1997 +7%	Minimal public and media response	n/a	Method and rate are generally perceived as fair. Most complaints from residential owners with downspouts discharging to pervious areas.
Tacoma, WA	ERU with different rates based on land uses	Range based on land uses: $0.1240 to 0.9920 per 500 sq. ft. of total area plus $3.21 per month	Yes: 1997 +7% 1998 +8% 1999 +2%	Not Happy, but Acceptable	Inflation	Generally perceive rates as fair. Has Citizens Advisory Panel made up of customers that review all rate changes and forwards recommendations to City Council
Austin, TX	ERU method for residential and impervious are method for commercial.	Residential = $4.45 per month; Commercial $48 per acre of impervious area (based on inspection)	Yes: 1998 +21%	Very little response even at public hearings	To fund projects for FY 1999 by the Watershed Protection Dept.	Depends who you ask—vocal minority see the fee as unfair and majority of pubic is silent.
Hillsboro County, FL	Impervious Surface Measurement	n/a	No	n/a	n/a	Rates are perceived as generally fair due to rates perceived to be low.

Conclusions and Recommendations

In setting a stormwater utility rate, cities and towns should start by setting a reasonable rate. The experience of other cities shows that rates can be changed with little public reaction as long as the changes are not extreme and appear reasonable. The rate should build upon an overall assessment method that is fair and equitable. Any rate changes will open up the utility fee to public scrutiny. An assessment method that is understood and perceived as fair and equitable by the public will go a long way in defending any future rate changes.

Recommendations:

1. The individual assessment fee should be based on a reasonably accurate, technically defensible measure of runoff and the rate should be based on a reasonable estimation of revenue need.
2. Utility users in different land use classes should pay in proportion to the runoff their classes generate relative to others. If the assessment method is not accounting for this variability then variable rates should be used.
3. The rate should be legal and politically acceptable.
4. The rate or rates should be flexible so that the rate for a given class of users can be changed without having to reprogram the entire fee structure.
5. The set rate should generate adequate revenues.
6. The public should have a means to comment on and influence rate changes. For example Tacoma, WA has a Citizens Advisory Panel made up of customers that reviews all rate changes and forwards recommendation to City Council.